

Armed Forces College of Medicine

AFCM



Cranial cavity 2

By

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INTENDED LEARNING OBJECTIVES (ILO)

By the end of this lecture the student will be able to:

1. List the single and paired dural venous sinuses and their drainage
2. Describe venous sinuses with special emphasis on cavernous sinuses and its applied anatomy.
3. Identify the important emissary veins & their clinical importance
4. Identify the diploic veins & their clinical importance

DURAL VENOUS SINUSES



Definition: are venous channels lying between the 2 dural layers

DURAL VENOUS SINUSES



❑ 6 Paired Sinuses

1- Sphenoparietal
2- Cavernous

3- Superior petrosal
4- Inferior petrosal

5- Sigmoid
6- Transvers

❑ 4 Single Sinuses:

1-Superior sagittal
2- Inferior sagittal

3- Straight
4- Occipital

❑ 2 Multiple Sinuses :

1- Intercaverno
2- Basillar plex

DURAL VENOUS SINUSES



Paired Venous Sinuses

DURAL VENOUS SINUSES



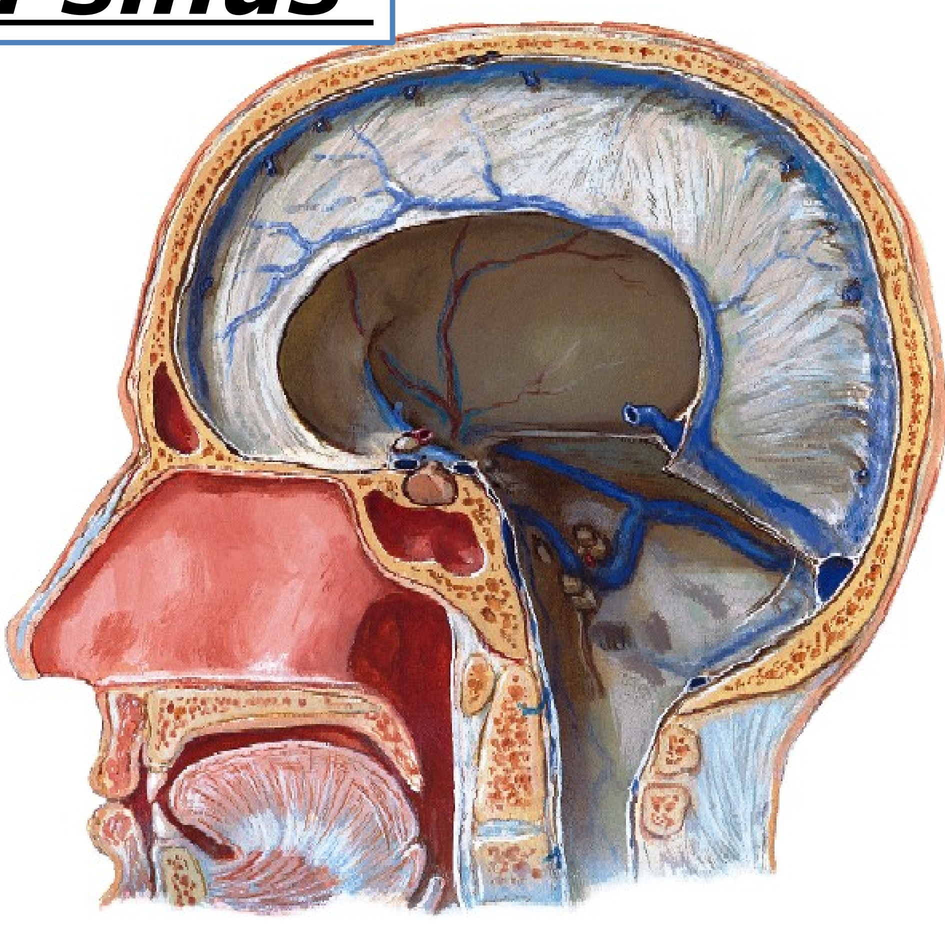
- Superior sagittal sinus

Site:

- Along the upper attached margin of **falx cerebri**

Course:

- Starts anteriorly at **crista galli**
- Runs **upwards & backwards**
- Ends opposite internal occipital protuberance
- by turning usually to the **right side** to continue as the **right transverse** sinus.
- The dilated posterior end is referred to as the **confluence**





DURAL VENOUS SINUSES

- Superior sagittal sinus

- **Tributaries:** I- Superior cerebral veins.

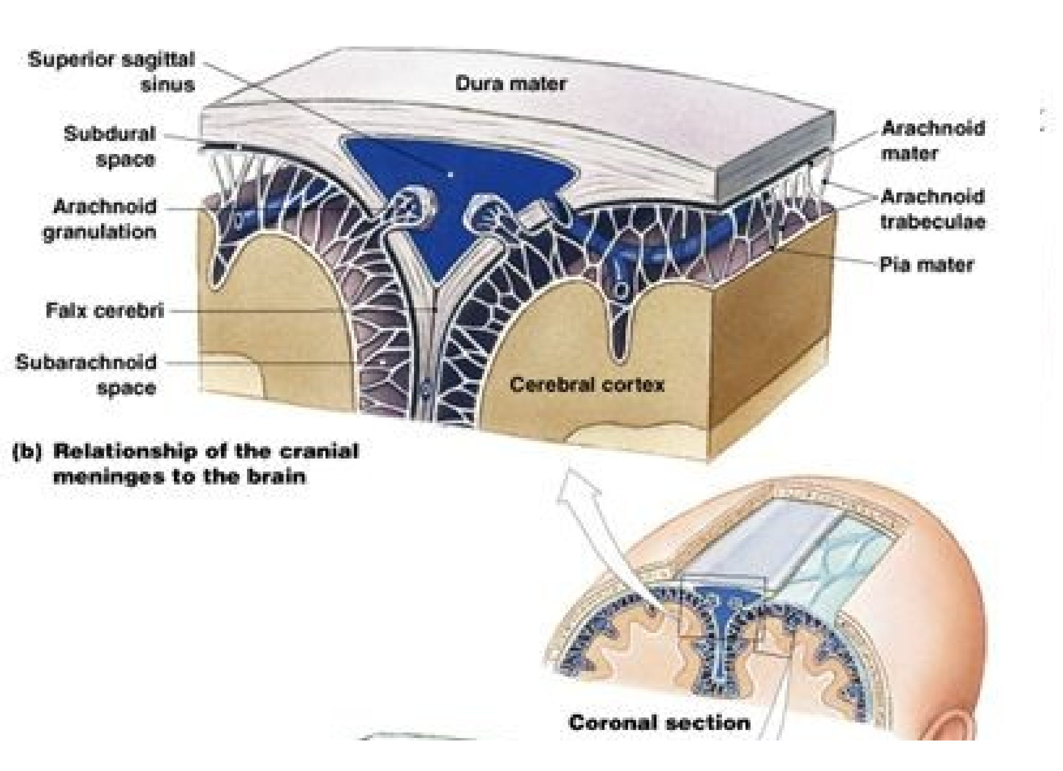
II- communication may exist between transverse sinus, straight sinus, superior sagittal sinus and occipital sinus.

DURAL VENOUS SINUSES

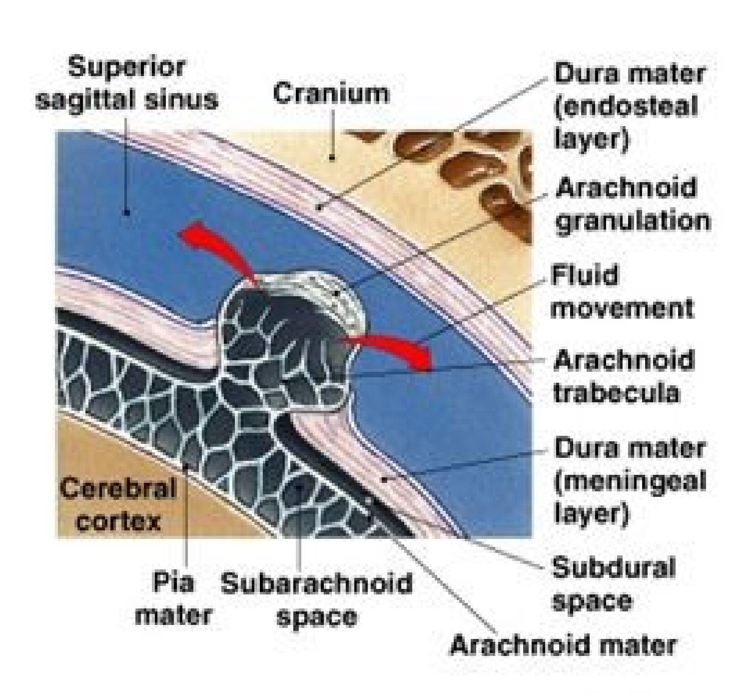


- Superior sagittal sinus

Arachnoid villi and granulations projecting into the sinus



(b) Relationship of the cranial meninges to the brain



2- inferior sagittal sinus

Site: Along the lower free margin of **falx cerebri**

Course:

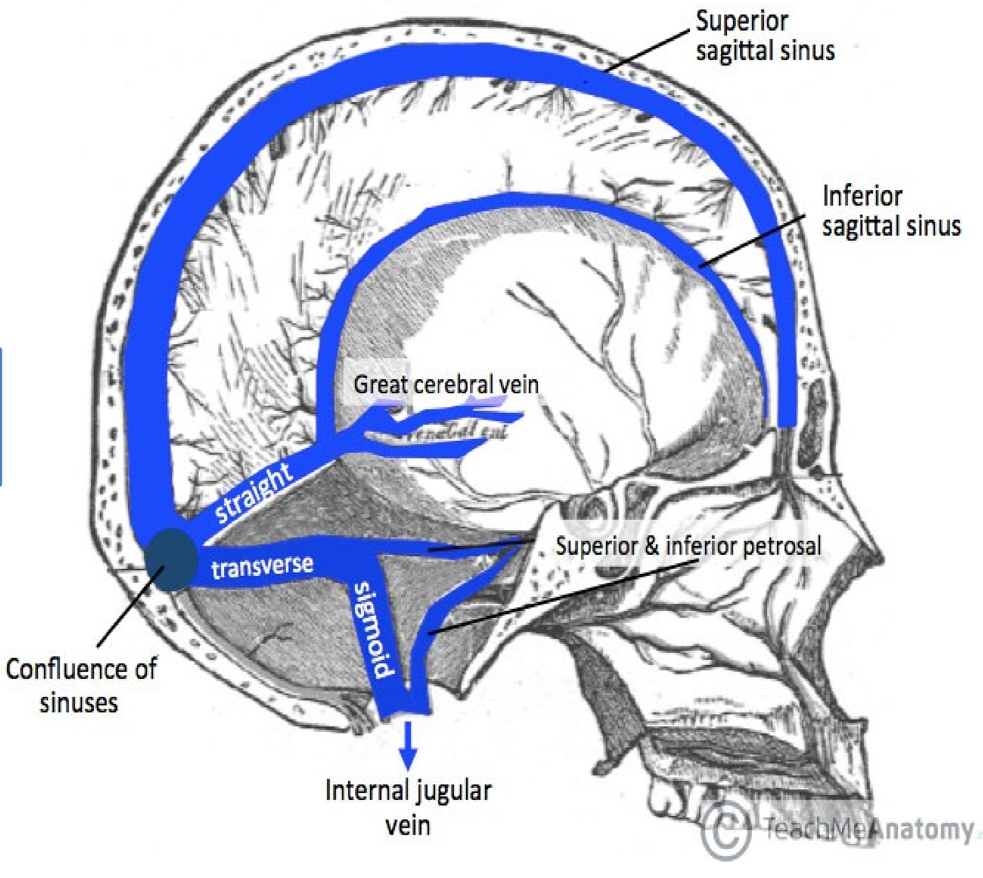
- Runs **backwards**
- Ends by unite with **great cerebral vein (vein of Gallen)** to form straight sinus

3- Straight sinus

Site: Along the base of **falx cerebri** when attached with the superior surface of **tentorium cerebelli**

Course:

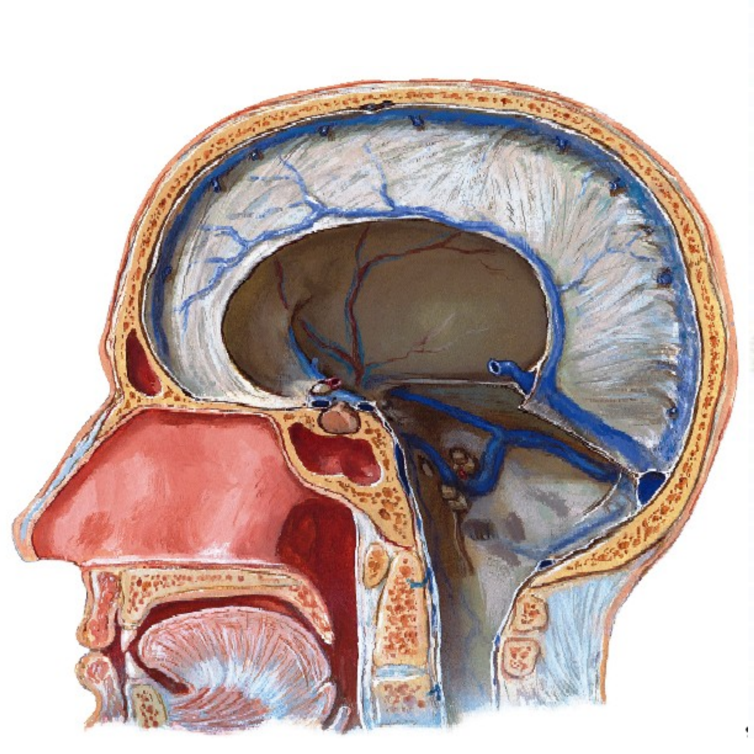
- At the site of confluence of sinuses , the straight sinus end by turning usually to the **left side** to continue as the **left**

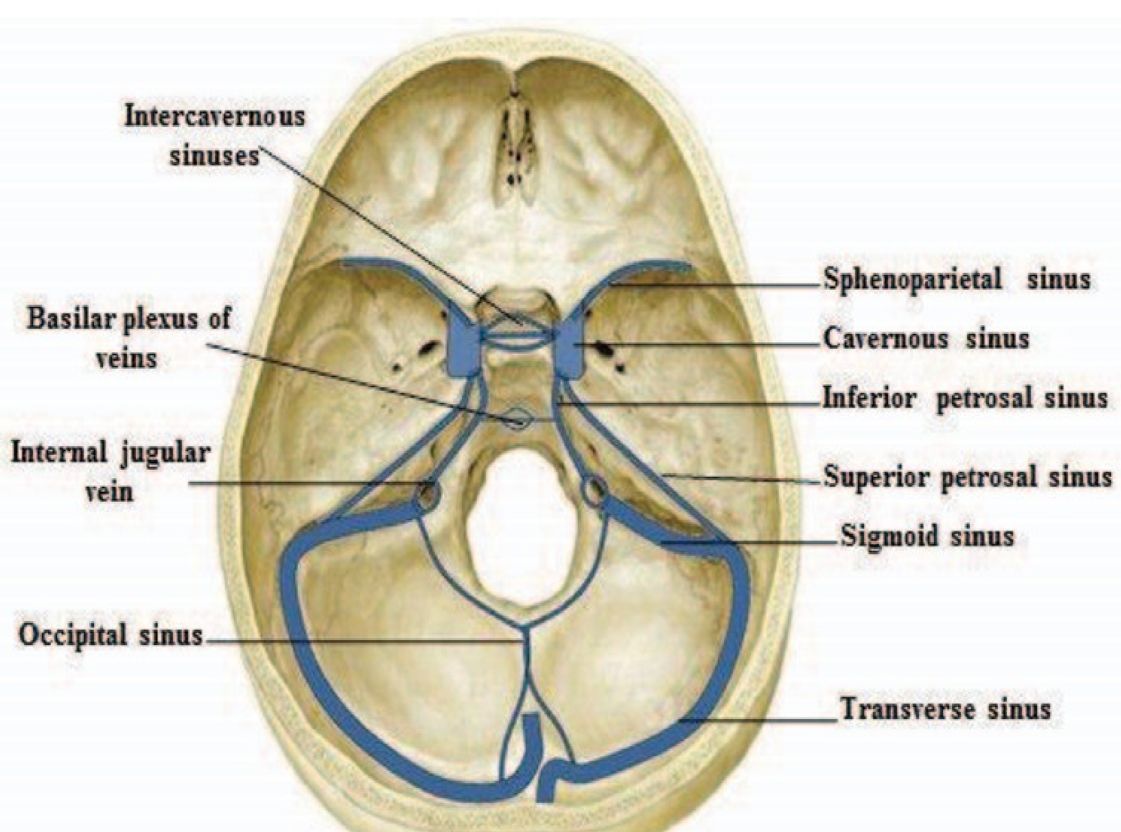


DURAL VENOUS SINUSES

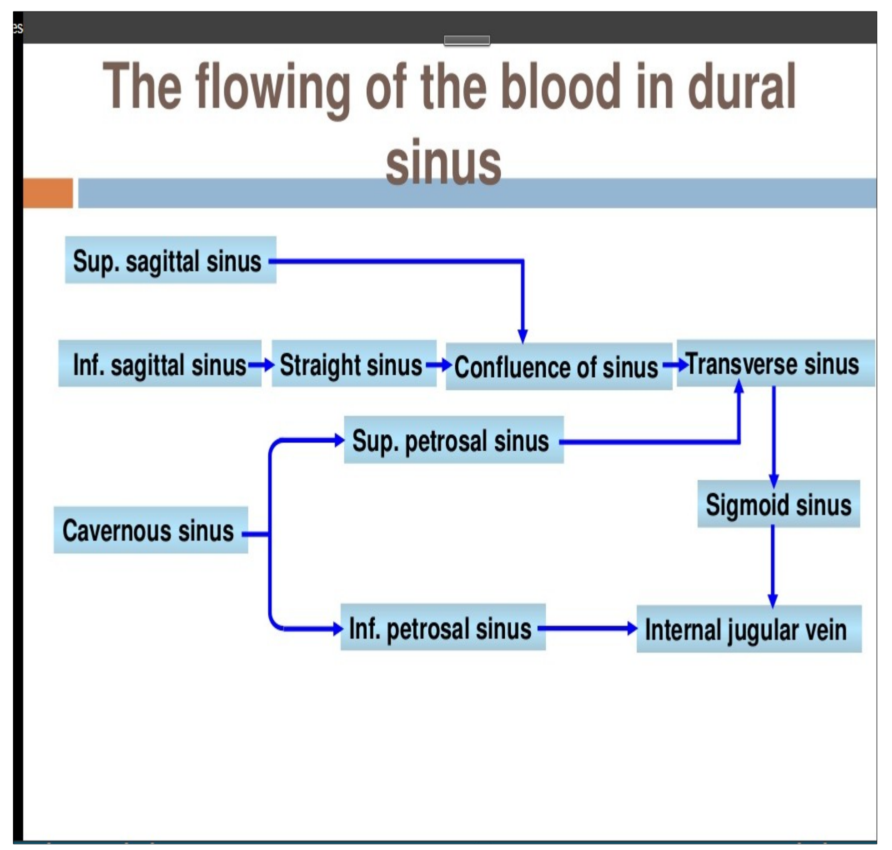


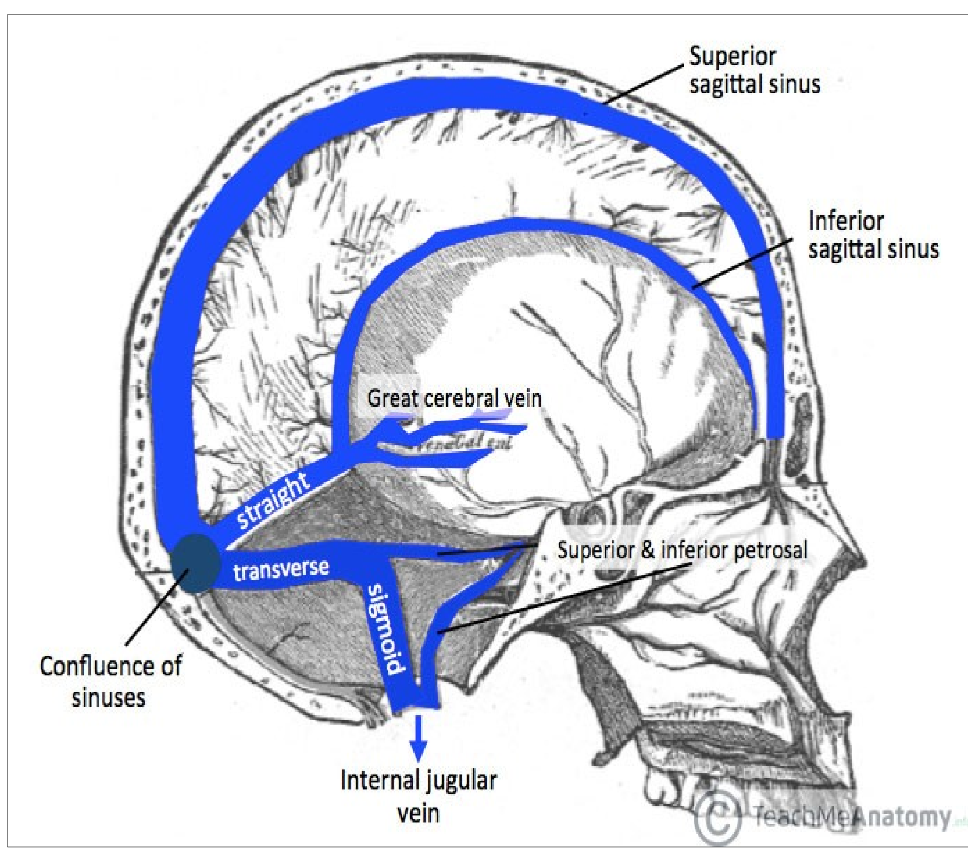
Flow of Blood in Venous Sinuses





Describe the flow of Blood in dural sinuses?



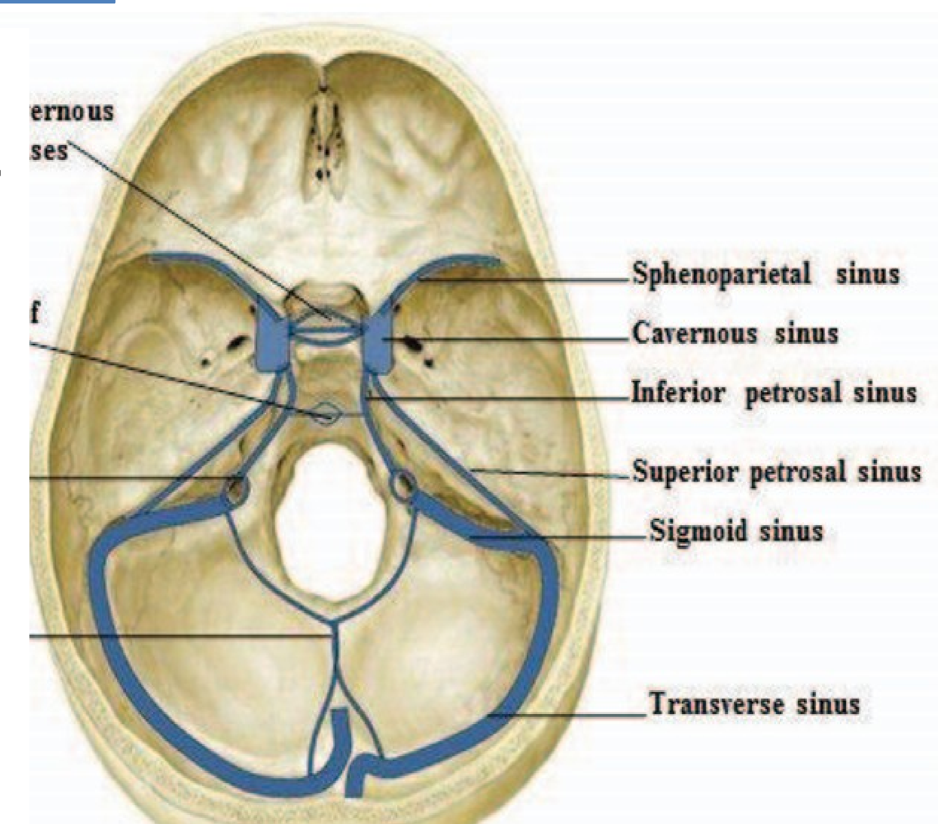


DURAL VENOUS SINUSES



4- Cavernous Sinus:

It is a large venous space lying in middle cranial fossa, on either side of body of sphenoid bone



Extent:

- Its anterior end reaches the ***medial end of superior orbital fissure***
- its posterior end reaches ***the apex of petrous temporal b.***

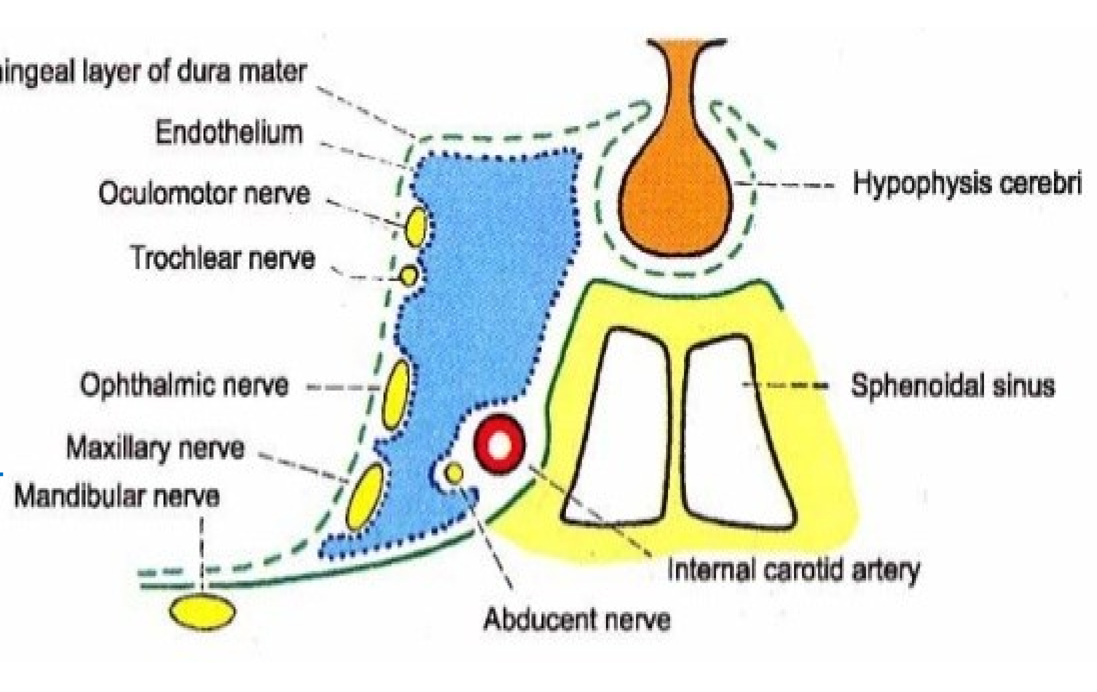
DURAL VENOUS SINUSES



4- Cavernous Sinus:

❑ **Structures in the lateral wall of the sinus from above downwards;**

i. Oculomotor nerve
ii. Trochlear nerve.
iii. Ophthalmic nerve
iv. Maxillary nerve



❑ **Structures passing through the sinus:**

i- Internal carotid artery
ii- abducent nerve
(inferolateral to the artery)

DURAL VENOUS SINUSES



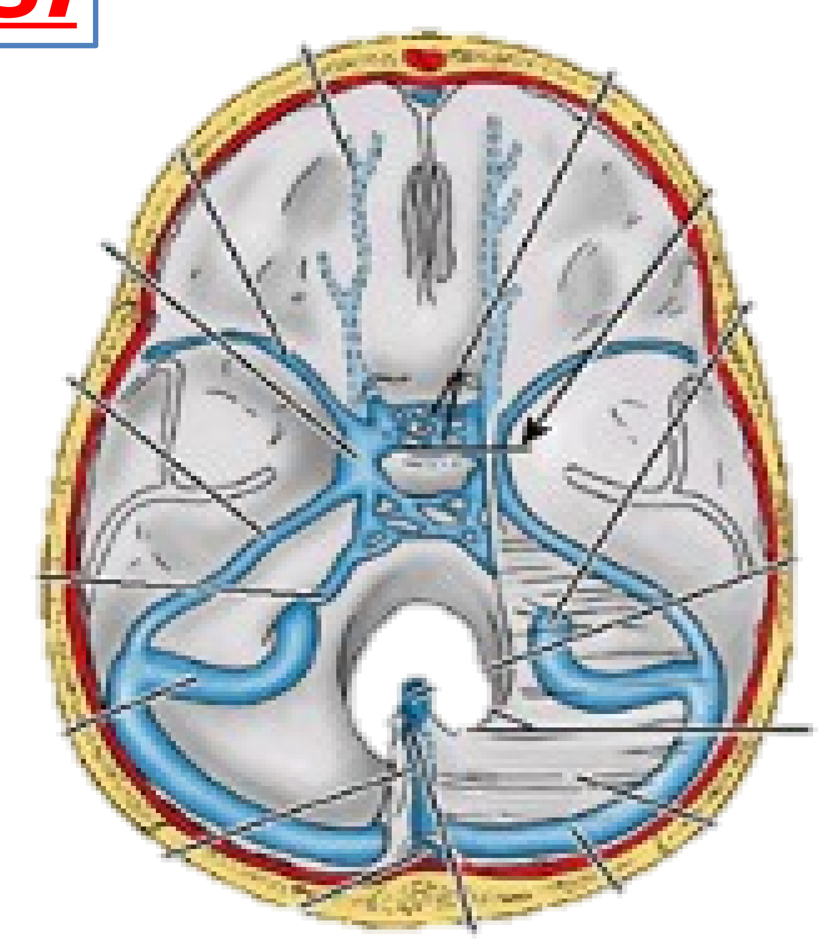
4- Cavernous Sinus:

- **Tributaries:**

a. From the orbit:
b. From the brain
c. From the meninges

- **Drainage**:

a. Superior petrosal sinus → Transverse sinus.
b. Inferior petrosal sinus → IJV.



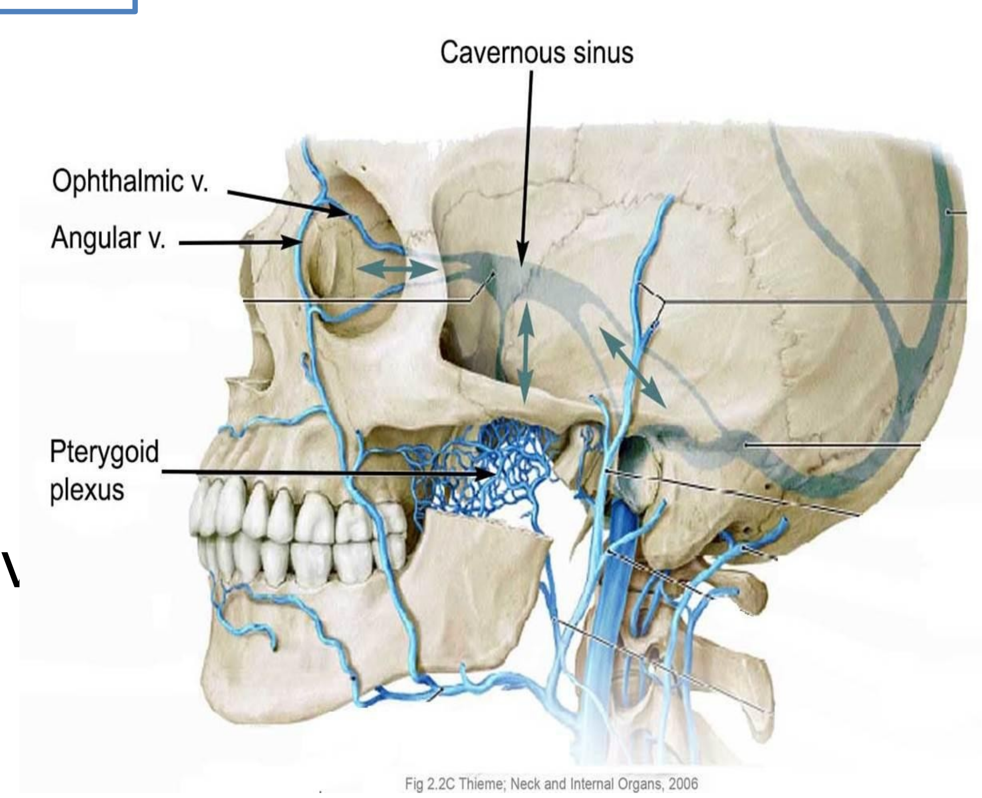
DURAL VENOUS SINUSES



4- Cavernous Sinus:

- **Communications with**:

1- **Pterygoid venous plexus**
via emissary vs.
2- **Facial v.**
via superior ophthalmic v
3- **Its fellow on the opposite side**
via 3 intercavernous sinuses.



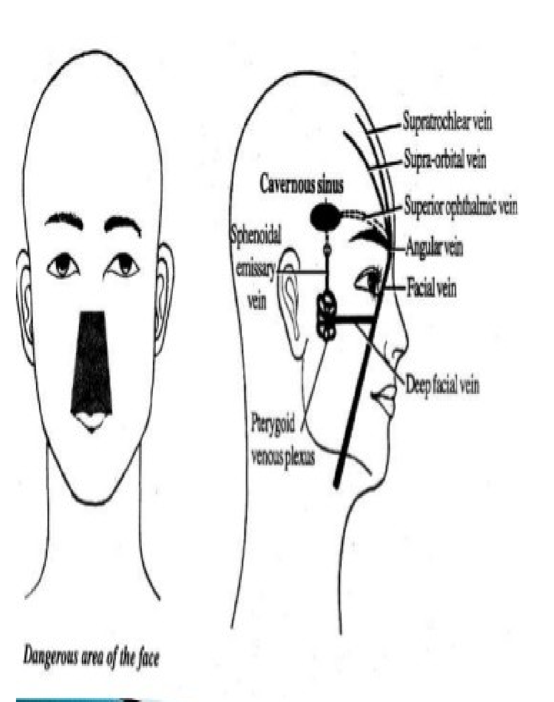
DURAL VENOUS SINUSES

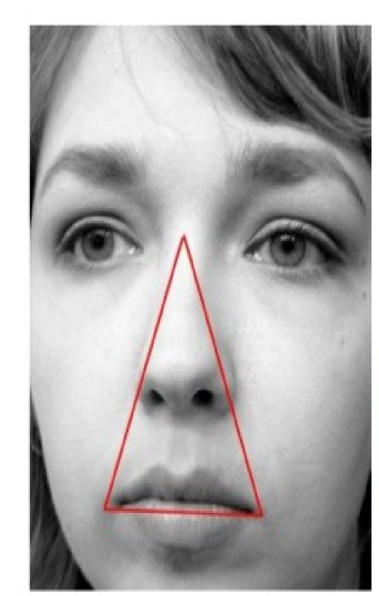


Thrombosis of Cavernous

Is caused by spread of infection from the dangerous area of face.

This affects cranial nerves III, IV & VI.









Clinical

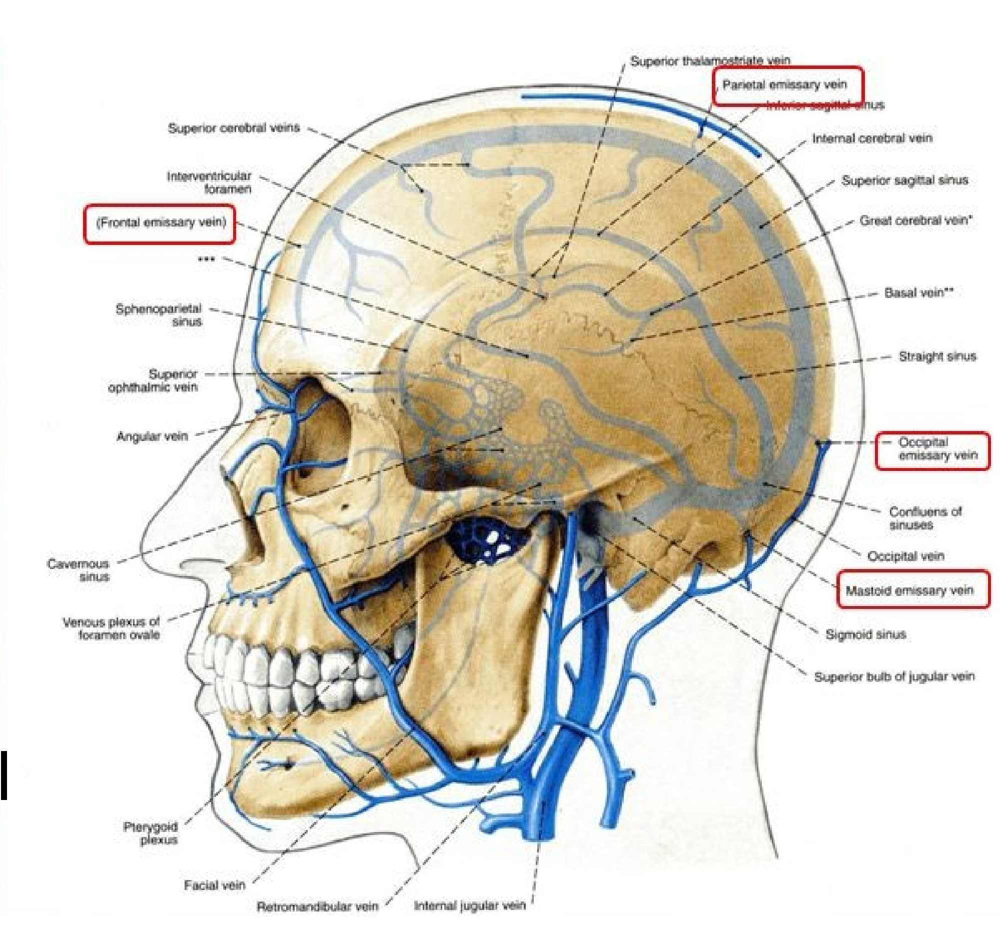
- High **fever**
- **Periorbital edema** and **chemosis** (conjunctival edema)
- **Cranial nerve palsies** (CN VI most common)
- Decreased **visual acuity**

EMISSARY VEINS:

They are valveless veins connecting dural sinuses & extracranial veins. –

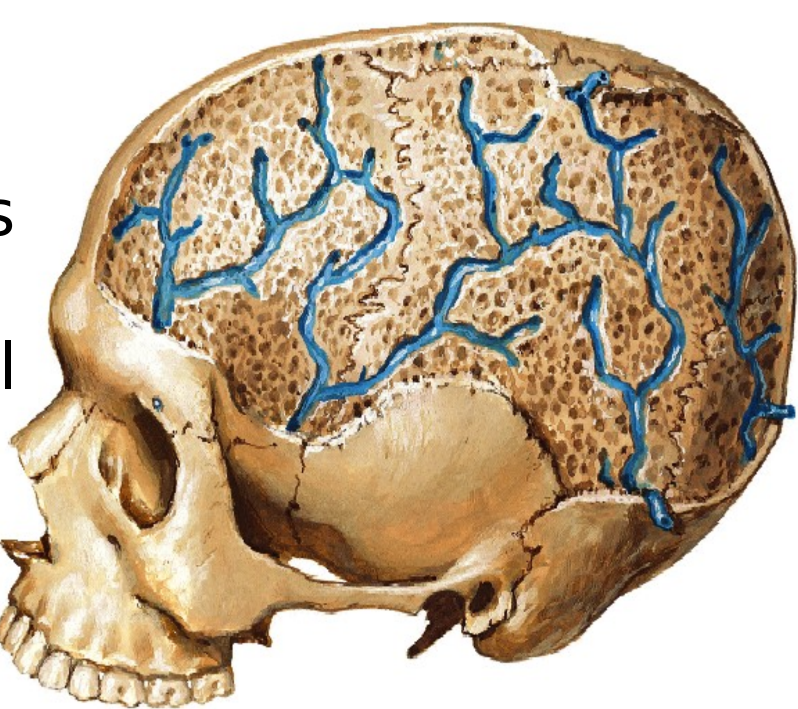
clinical importance:

1. Equalizing venous pressure between outside & inside the skull
2. Spreading infection from outside to inside the skull

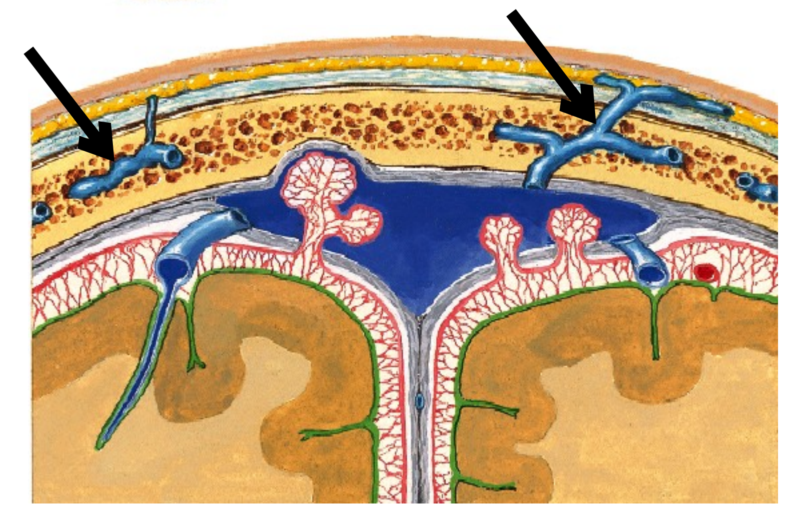


DIPLOIC VEINS:

- They are thin walled & valveless channels
- present inside the diploe of skull
- absent at birth but they are developed after 2 years postnatally.



- **They communicate with** the dural sinuses.



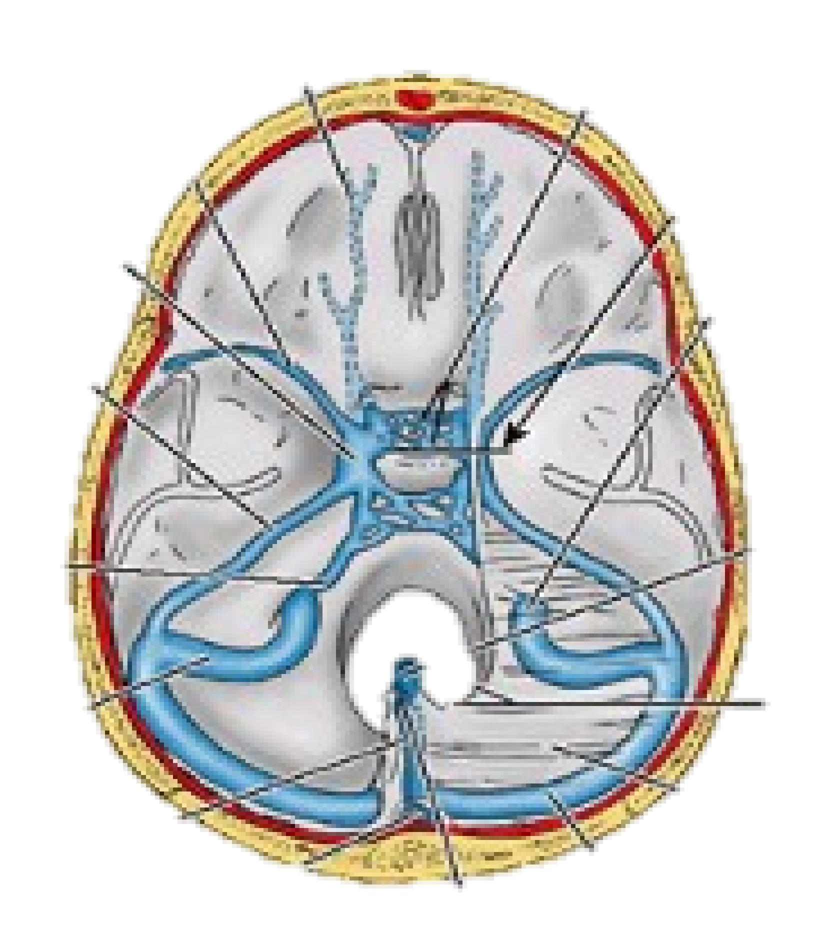
:clinical importance

spreading an infection of skull .bones to the dural sinuses

Lecture Quiz



Identify Venous Sinuses present in this figure?



Lecture Quiz



ST SINUS

ISS

Sigmoid sinus

SSS

IJV

1
2
3
4
5
6
7
8

References:

1 Snell's clinical anatomy by regions (2019): 10th Edition

2- Clinically oriented anatomy, K.L. Moore & A. F. Dalley

3- Grey's anatomy for students, Drake et. al.